



## TFT LCD Preliminary Specification

# MODEL NO.: M220J1-L01



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OPTOELECTRONICS CORP.

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Model No.: M220J1-L01

**Preliminary****REVISION HISTORY**

Version	Date	Section	Description
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## 1. GENERAL DESCRIPTION

### 1.1 OVERVIEW

The M220J1-L01 model is a 22 inch wide TFT-LCD module with a 4-CCFL Backlight Unit and a 30-pin 2ch-LVDS interface. This module supports 1920 x 1200 WUXGA (16:10 wide screen) mode and displays up to 16.7 millions colors. The inverter module for the Backlight Unit is not built in.

### 1.2 FEATURES

- Super wide viewing angle
- High contrast ratio
- Fast response time
- High color saturation (EBU Like Specifications)
- WUXGA (1920 x 1200 pixels) resolution
- DE (Data Enable) only mode
- LVDS (Low Voltage Differential Signaling) interface

### 1.3 APPLICATION

- Workstation & desktop monitor
- Display terminals for AV application

### 1.4 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Diagonal size	558.68	mm	
Active Area	473.76x296.1	mm	(1)
Bezel Opening Area	477.7 (H) x 300.1 (V)	mm	
Driver Element	a-Si TFT active matrix	-	-
Pixel Number	1920 x R.G.B. x 1200	pixel	-
Pixel Pitch	0.247(H) x 0.247(V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	16.7 millions	color	-
Transmissive Mode	Normally White	-	-
Surface Treatment	Hard coating (3H), AG (Haze 25%)	-	-

### 1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)	493.2	493.7	494.2	mm	(1)
	Vertical(V)	319.6	320.1	320.6	mm	
	Depth(D)	16	16.5	17	mm	
Weight				2550	g	
I/F connector mounting position		The mounting inclination of the connector makes the screen center within $\pm 0.5$ mm as the horizontal.				

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.



## 2. ABSOLUTE MAXIMUM RATINGS

### 2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T <sub>ST</sub>	-20	+60	°C	(1)
Operating Ambient Temperature	T <sub>OP</sub>	0	+50	°C	(1), (2)
Shock (Non-Operating)	S <sub>NOP</sub>	-	50	G	(3), (5)
Vibration (Non-Operating)	V <sub>NOP</sub>	-	1	G	(4), (5)
LCD Cell Life Time	L <sub>CELL</sub>	50,000	-	Hrs	MTBF based



## 2.2 ELECTRICAL ABSOLUTE RATINGS

### 2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	V <sub>CC</sub>	-0.3	+6	V	(1)

### 2.2.2 BACKLIGHT UNIT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Lamp Voltage	V <sub>L</sub>	-	2.5K	V <sub>RMS</sub>	(1), (2), I <sub>L</sub> = 7.0 mA
Lamp Current	I <sub>L</sub>	3.0	8.0	mA <sub>RMS</sub>	
Lamp Frequency	F <sub>L</sub>	40	80	KHz	

Note (1) Permanent damage might occur if the module is operated at conditions exceeding the maximum values.

Note (2) Specified values are for lamp (Refer to 3.2 for further information).



### 3. ELECTRICAL CHARACTERISTICS

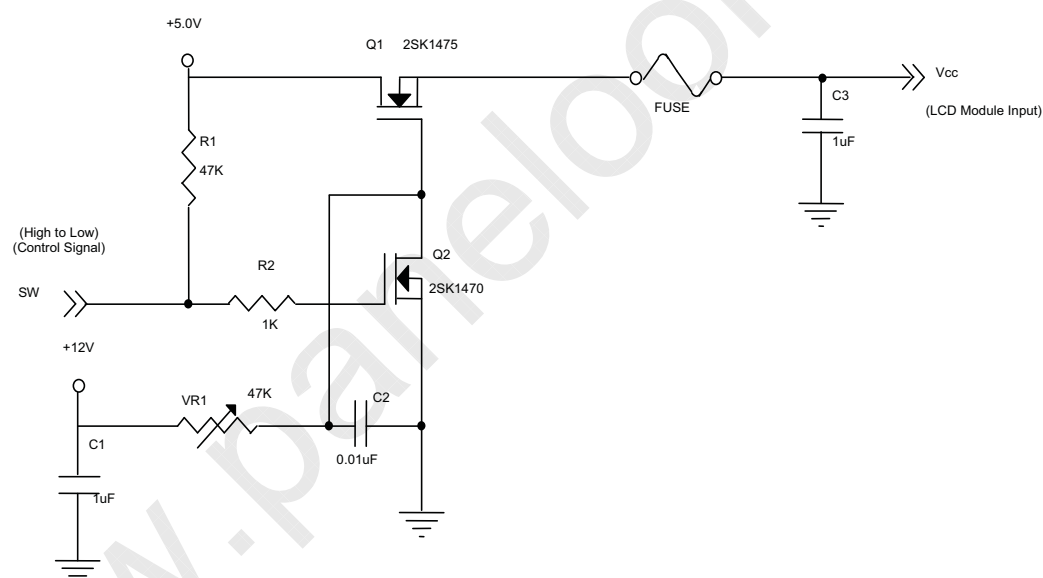
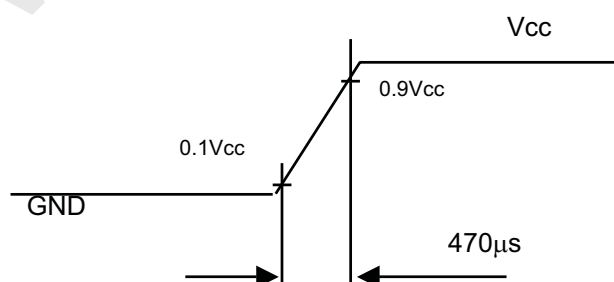
#### 3.1.1 TFT LCD MODULE

Ta = 25 ± 2 °C

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		V <sub>CC</sub>	4.5	5.0	5.5	V	-
Ripple Voltage		V <sub>RP</sub>	-	--	100	mV	-
Rush Current		I <sub>RUSH</sub>	-	--	(3)	A	(2)
Power Supply Current	White	I <sub>CC</sub>	-	590	(819)	mA	(3)a
	Black		-	950	(1300)	mA	(3)b
	Vertical Stripe		-	1030	(1400)	mA	(3)c
LVDS differential input voltage		V <sub>id</sub>	200	-	600	mV	
LVDS common input voltage		V <sub>ic</sub>	--	0.8	--	V	

Note (1) The module should be always operated within above ranges.

Note (2) Measurement Conditions:

**V<sub>CC</sub> rising time is 470μs**



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Note (3) The specified power supply current is under the conditions at  $V_{cc} = 5.0\text{ V}$ ,  $T_a = 25 \pm 2\text{ }^{\circ}\text{C}$ ,  $f_v = 60\text{ Hz}$ , whereas a power dissipation check pattern below is displayed.

a. White Pattern



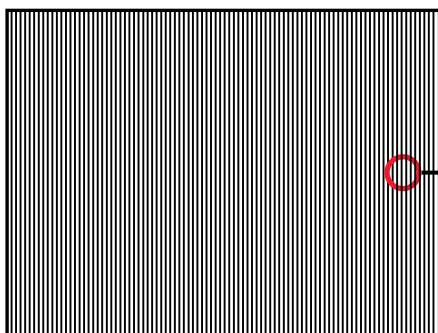
Active Area

b. Black Pattern

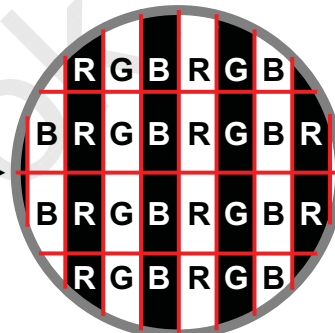


Active Area

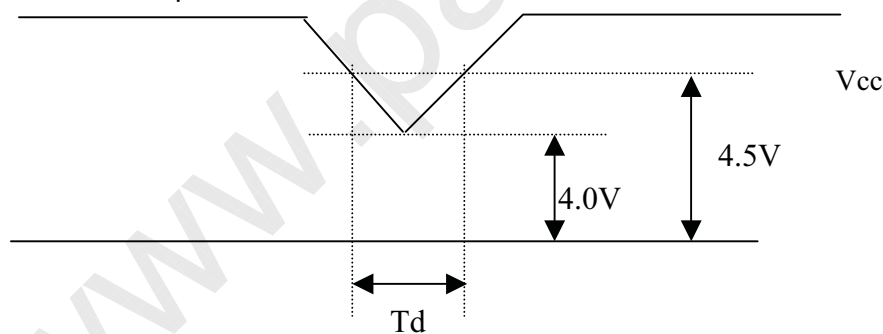
c. Vertical Stripe Pattern



Active Area



### 3.1.2 Vcc Power Dip Condition:



Dip condition:  $4.0V \leq V_{cc} \leq 4.5V$ ,  $T_d \leq 20ms$





## 3.2 BACKLIGHT UNIT

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Lamp Input Voltage	$V_L$	738	820	902	$V_{RMS}$	$I_L = (7.0) \text{ mA}$
Lamp Current	$I_L$	3	7.0	8	$\text{mA}_{RMS}$	(1)
Lamp Turn On Voltage	$V_S$	-	-	1560(25°C)	$V_{RMS}$	(2)
		-	-	1800(0°C)	$V_{RMS}$	(2)
Operating Frequency	$F_L$	40	60	80	KHz	(3)
Lamp Life Time	$L_{BL}$	50000		-	Hrs	(5) $I_L = (7.0) \text{ mA}$
Power Consumption	$P_L$	-	22.96	-	W	(4), $I_L = (7.0) \text{ mA}$



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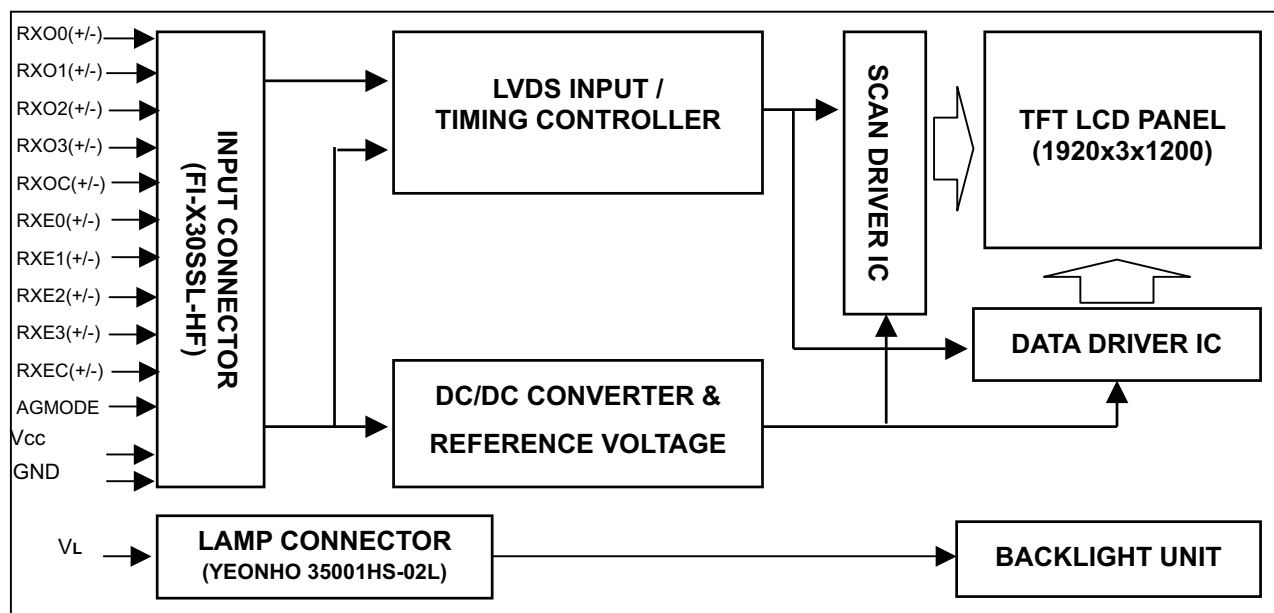
**Preliminary**

[www.panelook.com](http://www.panelook.com)

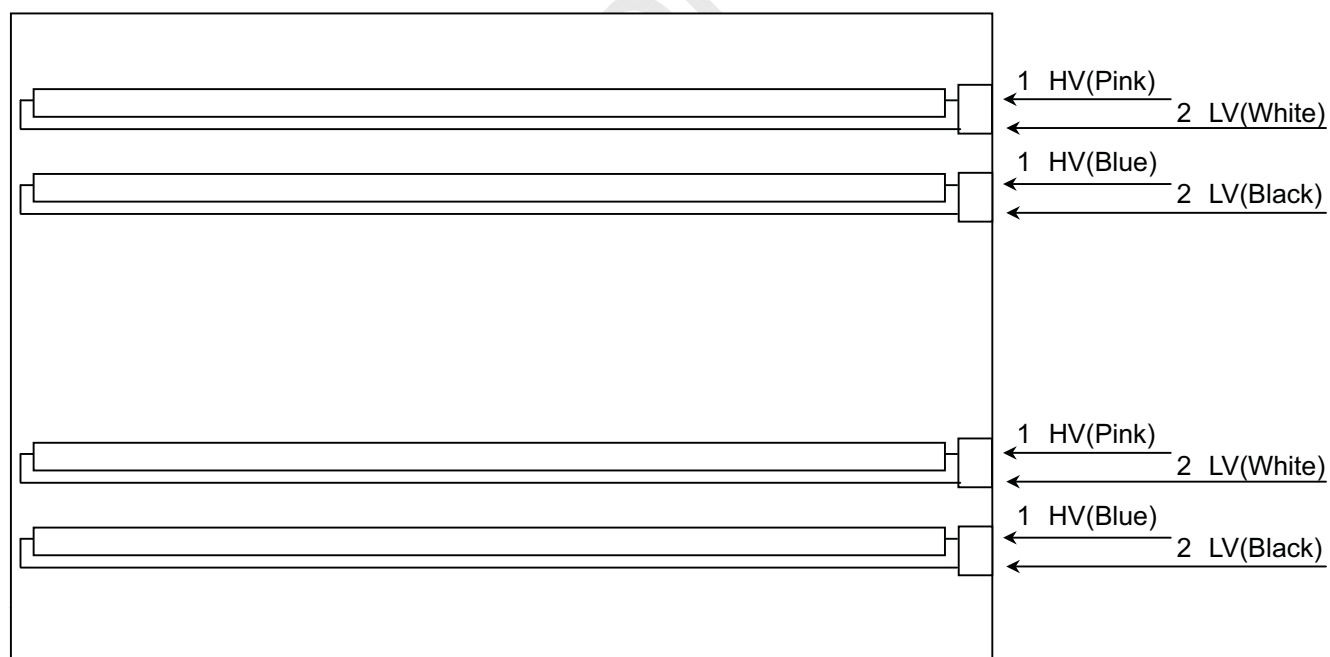


## 4. BLOCK DIAGRAM

### 4.1 TFT LCD MODULE



### 4.2 BACKLIGHT UNIT



Note: On the same side, the same-polarity lamp voltage design for lamps is recommended



## 5. INPUT TERMINAL PIN ASSIGNMENT

### 5.1 TFT LCD MODULE

Pin	Name	Description
1	RXO0-	Negative LVDS differential data input. Channel O0 (odd)
2	RXO0+	Positive LVDS differential data input. Channel O0 (odd)
3	RXO1-	Negative LVDS differential data input. Channel O1 (odd)
4	RXO1+	Positive LVDS differential data input. Channel O1 (odd)
5	RXO2-	Negative LVDS differential data input. Channel O2 (odd)
6	RXO2+	Positive LVDS differential data input. Channel O2 (odd)
7	GND	Ground
8	RXOC-	Negative LVDS differential clock input. (odd)
9	RXOC+	Positive LVDS differential clock input. (odd)
10	RXO3-	Negative LVDS differential data input. Channel O3(odd)
11	RXO3+	Positive LVDS differential data input. Channel O3 (odd)
12	RXE0-	Negative LVDS differential data input. Channel E0 (even)
13	RXE0+	Positive LVDS differential data input. Channel E0 (even)
14	GND	Ground
15	RXE1-	Negative LVDS differential data input. Channel E1 (even)
16	RXE1+	Positive LVDS differential data input. Channel E1 (even)
17	GND	Ground
18	RXE2-	Negative LVDS differential data input. Channel E2 (even)
19	RXE2+	Positive LVDS differential data input. Channel E2 (even)
20	RXEC-	Negative LVDS differential clock input. (even)
21	RXEC+	Positive LVDS differential clock input. (even)
22	RXE3-	Negative LVDS differential data input. Channel E3 (even)
23	RXE3+	Positive LVDS differential data input. Channel E3 (even)
24	GND	Ground
25	NC	Not connection, this pin should be open.
26	AGMODE	AGMODE should be tied to ground or open.
27	VCC	+5.0V power supply
28	VCC	+5.0V power supply
29	VCC	+5.0V power supply
30	VCC	+5.0V power supply

Note (1) Connector Part No.: 093G30-B0001A(STARCONN) or FI-X30SSL-HF(JAE) or EQUIVALENT.

Note (2) The first pixel is odd.

Note (3) Input signal of even and odd clock should be the same timing.



## 5.2 LVDS DATA MAPPING TABLE

LVDS Channel O0	LVDS output	D7	D6	D4	D3	D2	D1	D0
	Data order	OG0	OR5	OR4	OR3	OR2	OR1	OR0
LVDS Channel O1	LVDS output	D18	D15	D14	D13	D12	D9	D8
	Data order	OB1	OB0	OG5	OG4	OG3	OG2	OG1
LVDS Channel O2	LVDS output	D26	D25	D24	D22	D21	D20	D19
	Data order	DE	NA	NA	OB5	OB4	OB3	OB2
LVDS Channel O3	LVDS output	D23	D17	D16	D11	D10	D5	D27
	Data order	NA	OB7	OB6	OG7	OG6	OR7	OR6
LVDS Channel E0	LVDS output	D7	D6	D4	D3	D2	D1	D0
	Data order	EG0	ER5	ER4	ER3	ER2	ER1	ER0
LVDS Channel E1	LVDS output	D18	D15	D14	D13	D12	D9	D8
	Data order	EB1	EB0	EG5	EG4	EG3	EG2	EG1
LVDS Channel E2	LVDS output	D26	D25	D24	D22	D21	D20	D19
	Data order	DE	NA	NA	EB5	EB4	EB3	EB2
LVDS Channel E3	LVDS output	D23	D17	D16	D11	D10	D5	D27
	Data order	NA	EB7	EB6	EG7	EG6	ER7	ER6



## 5.3 BACKLIGHT UNIT

Pin	Symbol	Description	Remark
1	HV	High Voltage	Pink
2	LV	Low Voltage	White
1	HV	High Voltage	Blue
2	LV	Low Voltage	Black

Note (1) Connector Part No.: YEONHO 35001HS-02L or equivalent

Note (2) User's connector Part No.: YEONHO 35001WR-02L or equivalent

## 5.4 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
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	Red(253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
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	Green(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
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	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage



## 6. INTERFACE TIMING

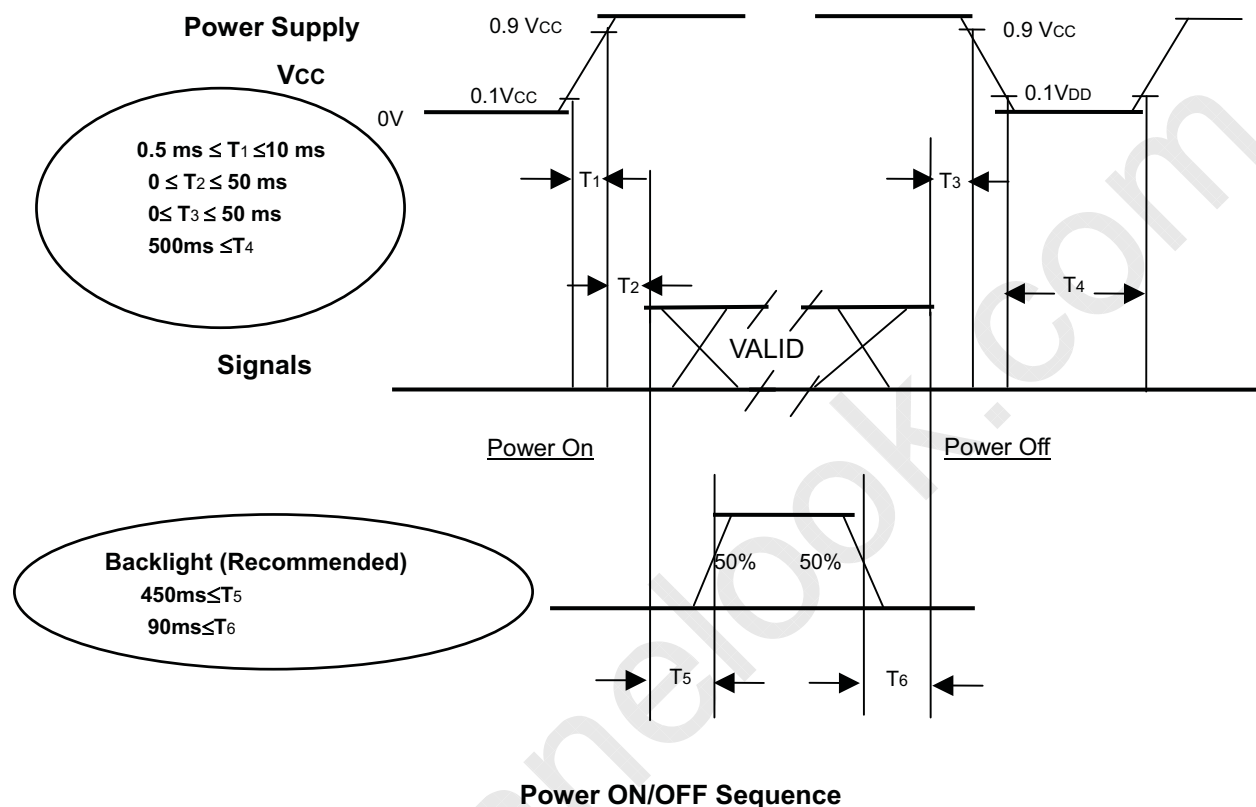
### 6.1 INPUT SIGNAL TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Clock	Frequency	Fc	(57.6)	77	85	MHz	-
	Period	Tc	(10.3)	13	(20)-	ns	
	High Time	Tch	-	4/7	-	Tc	-
	Low Time	Tcl	-	3/7	-	Tc	-
LVDS Data	Setup Time	Tlvs	600	-	-	ps	-
	Hold Time	Tlvh	600	-	-	ps	-
Vertical Active Display Term	Frame Rate	Fr	-	60	-	Hz	Tv=Tvd+Tvb
	Total	Tv	(1210)	1235	(1350)	Th	-
	Display	Tvd	1200	1200	1200	Th	-
	Blank	Tvb	Tv-Tvd	30	Tv-Tvd	Th	-
Horizontal Active Display Term	Total	Th	(1000)	1040	(1114)	Tc	Th=Thd+Thb
	Display	Thd	960	960	960	Tc	-
	Blank	Thb	Th-Thd	80	Th-Thd	Tc	-

## 6.2 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should follow the conditions shown in the following diagram.



### Note.

- (1) The supply voltage of the external system for the module input should be the same as the definition of Vcc.
- (2) Please apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation of the LCD turns off, the display may, instantly, function abnormally.
- (3) In case of Vcc = off level, please keep the level of input signals on the low or keep a high impedance.
- (4) T<sub>4</sub> should be measured after the module has been fully discharged between power on/off periods.
- (5) Interface signal shall not be kept at high impedance when the power is on.





## 7. OPTICAL CHARACTERISTICS

### 7.1 TEST CONDITIONS

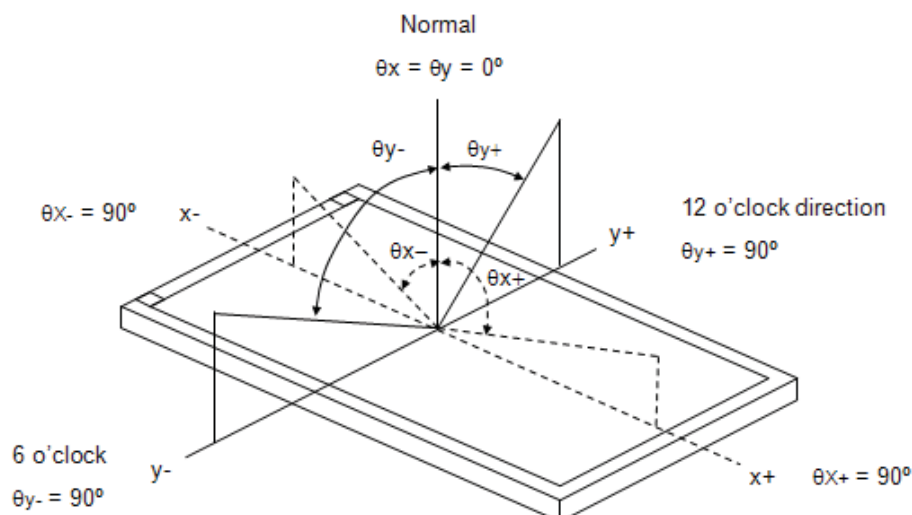
Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	V <sub>CC</sub>	5.0	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Inverter Current	I <sub>L</sub>	7.0	mA
Inverter Driving Frequency	F <sub>L</sub>	55	KHz
Inverter	Darfon VK.13165.101		

### 7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2. The following items should be measured under the test conditions described in 7.1 and stable environment shown in Note (6).

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity	Red	R <sub>x</sub>	θ <sub>x</sub> =0°, θ <sub>Y</sub> =0° CS-1000T R=G=B=255 Grayscale	Typ – 0.03	0.649	Typ + 0.03		(1), (5)
		R <sub>y</sub>			0.335			
	Green	G <sub>x</sub>			0.283			
		G <sub>y</sub>			0.605			
	Blue	B <sub>x</sub>			0.151			
		B <sub>y</sub>			0.073			
	White	W <sub>x</sub>			0.313			
		W <sub>y</sub>			0.329			
Center Luminance of White		L <sub>C</sub>		250	300	---	cd/m <sup>2</sup>	(4), (5)
Contrast Ratio		CR		700	1000	---	-	(2), (6)
Response Time		T <sub>R</sub>	θ <sub>x</sub> =0°, θ <sub>Y</sub> =0°	---	1.3	2.2	ms	(3)
		T <sub>F</sub>		---	3.7	5.8	ms	
White Variation		δW	θ <sub>x</sub> =0°, θ <sub>Y</sub> =0°	---	1.3	1.42	-	(5), (6)
Viewing Angle	Horizontal	θ <sub>x</sub> +	CR>10	75	85	---	Deg.	(1), (5)
		θ <sub>x</sub> -		75	85	---		
	Vertical	θ <sub>Y</sub> +		70	80	---		
		θ <sub>Y</sub> -		70	80	---		

Note (1) Definition of Viewing Angle ( $\theta_x, \theta_y$ ):



Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

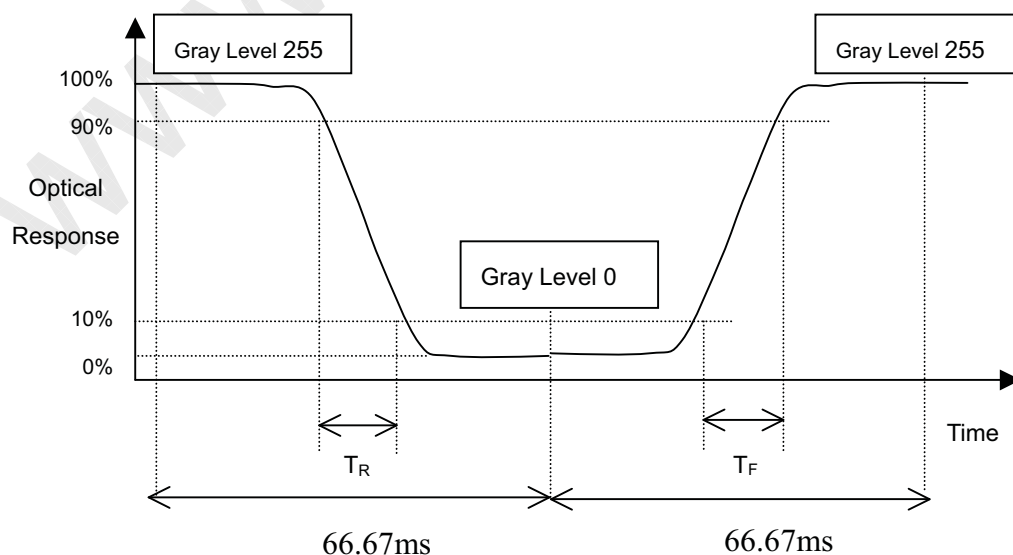
L255: Luminance of gray level 255

L 0: Luminance of gray level 0

$$\text{CR} = \text{CR} (5)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (6).

Note (3) Definition of Response Time ( $T_R$ ,  $T_F$ ):



**Note (4) Definition of Luminance of White ( $L_C$ ):**

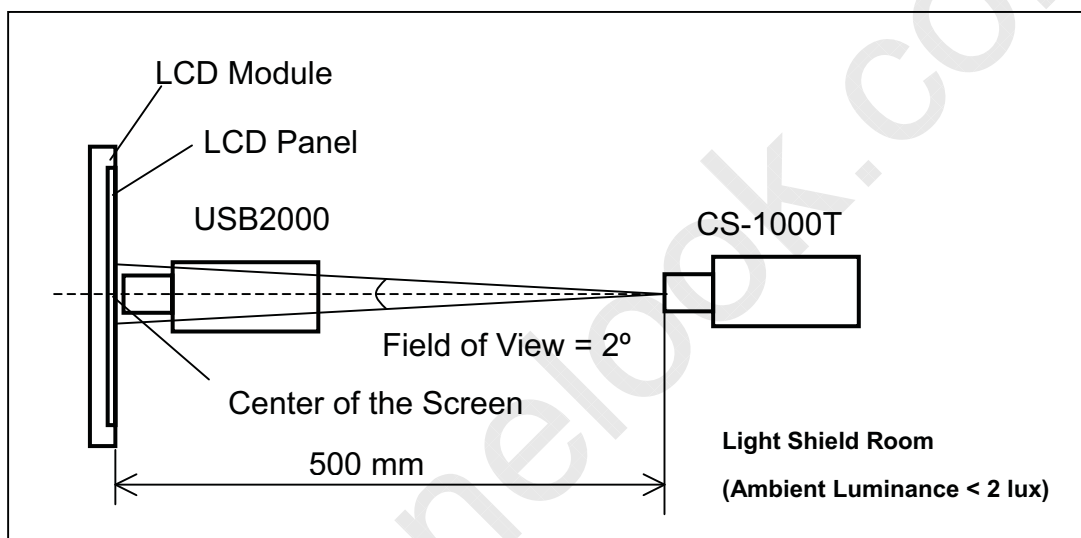
Measure the luminance of gray level 255 at center point

$$L_C = L(5)$$

$L(x)$  is corresponding to the luminance of the point X at Figure in Note (6).

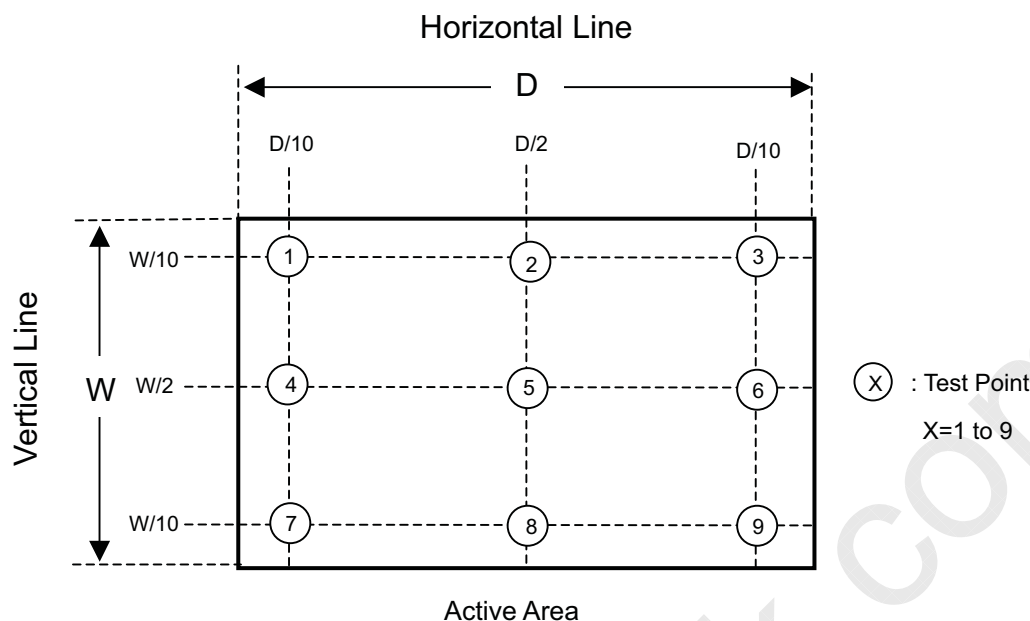
**Note (5) Measurement Setup:**

The LCD module should be stabilized at given temperature for 40 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 40 minutes in a windless room.

**Note (6) Definition of White Variation ( $\delta W$ ):**

Measure the luminance of gray level 255 at 9 points

$$\delta W = \text{Maximum } [L(1) \sim L(9)] / \text{Minimum } [L(1) \sim L(9)]$$



## 8. PACKAGING

### 8.1 PACKING SPECIFICATIONS

- (1) 6 LCD modules / 1 Box
- (2) Box dimensions: 595(L) X 330 (W) X 440 (H) mm
- (3) Weight: 17.48 Kg (6 modules per box)

### 8.2 PACKING METHOD

- (1) Carton Packing should have no failure in the following reliability test items.

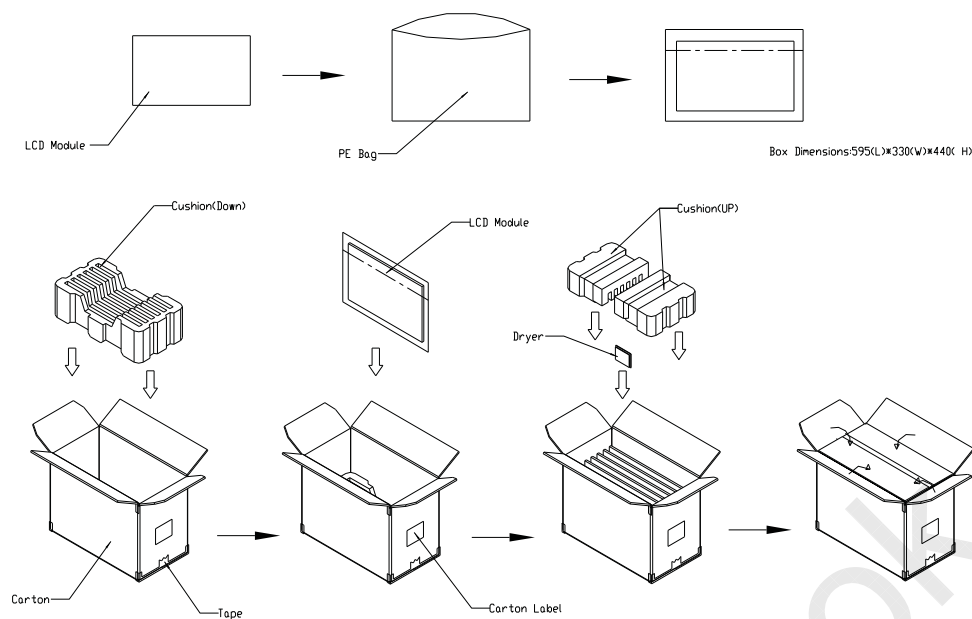
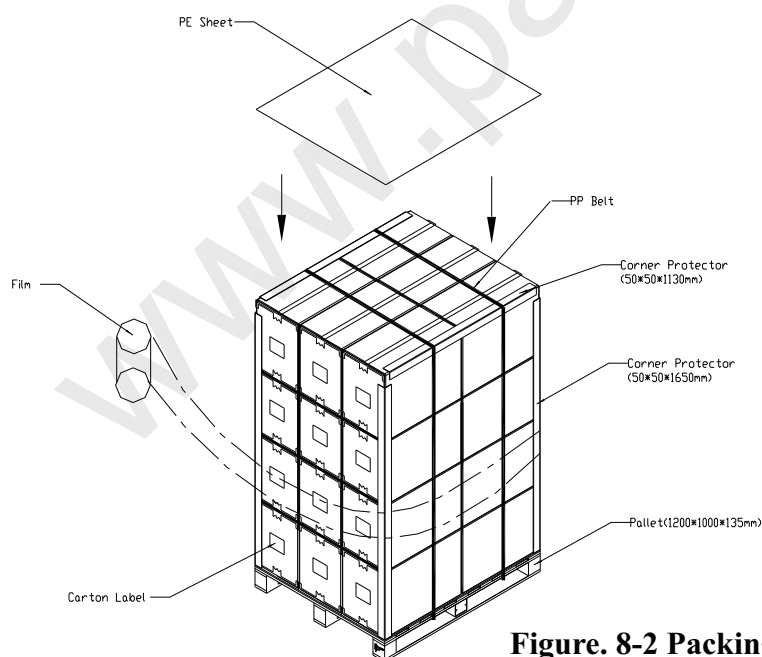
Test Item	Test Conditions	Note
Vibration	ISTA STANDARD Random, Frequency Range: 1 – 200 Hz Top & Bottom: 30 minutes (+Z), 10 min (-Z), Right & Left: 10 minutes (X) Back & Forth 10 minutes (Y)	Non Operation
Dropping Test	1 Angle, 3 Edge, 6 Face, 60cm	Non Operation

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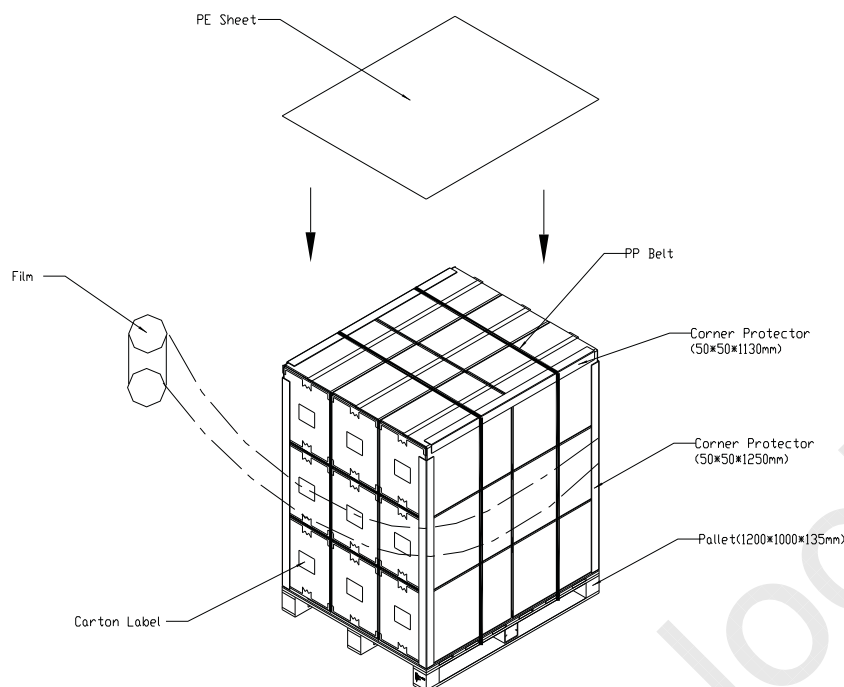
Doc No.: 4407Z505

Issued Date: Feb. 29, 2008

Model No.: M220J1-L01

**Preliminary****Figure. 8-1 Packing method****For ocean shipping****Figure. 8-2 Packing method**

For air transport


**Figure. 8-3 Packing method**

## 9. DEFINITION OF LABELS

### 9.1 CMO MODULE LABEL

The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.



- (a) Model Name: M220J1-L01
- (b) Revision: Rev. XX, for example: A0, A1... B1, B2... or C1, C2...etc.
- (c) CMO barcode definition:

Serial ID: XX-XX-X-XX-YMD-L-NNNN

Code	Meaning	Description
XX	CMO internal use	-
XX	Revision	Cover all the change



X	CMO internal use	-
XX	CMO internal use	-
YMD	Year, month, day	Year: 2001=1, 2002=2, 2003=3, 2004=4... Month: 1~12=1, 2, 3, ~, 9, A, B, C Day: 1~31=1, 2, 3, ~, 9, A, B, C, ~, W, X, Y, exclude I, O, and U.
L	Product line #	Line 1=1, Line 2=2, Line 3=3, ...
NNNN	Serial number	Manufacturing sequence of product

(d) Customer's barcode definition:

Serial ID: CM-22J11-X-X-X-XX-L-XX-L-YMD-NNNN

Code	Meaning	Description
CM	Supplier code	CMO=CM
22Z13	Model number	M220J1-L01=22J11
X	Revision code	ZBD, C1=A, C2=B, .... Non ZBD, C1=1, C2=2, ....
X	Source driver IC code	Century=1, CLL=2, Demos=3, Epson=4, Fujitsu=5, Himax=6, Hitachi=7, Hynix=8, LDI=9, Matsushita=A, NEC=B, Novatec=C,
X	Gate driver IC code	OKI=D, Philips=E, Renesas=F, Samsung=G, Sanyo=H, Sharp=I, TI=J, Topro=K, Toshiba=L, Windbond=M
XX	Cell location	Tainan, Taiwan=TN
L	Cell line #	1~12=0~C
XX	Module location	Tainan, Taiwan=TN; Ningbo China=NP
L	Module line #	1~12=0~C
YMD	Year, month, day	Year: 2001=1, 2002=2, 2003=3, 2004=4... Month: 1~12=1, 2, 3, ~, 9, A, B, C Day: 1~31=1, 2, 3, ~, 9, A, B, C, ~, T, U, V
NNNN	Serial number	By LCD supplier

## 10. PRECAUTIONS

### 10.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the module during assembly.
- (2) To assemble or install module into user's system can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
- (3) It's not permitted to have pressure or impulse on the module because the LCD panel and Backlight will be damaged.
- (4) Always follow the correct power sequence when LCD module is connecting and operating. This can prevent damage to the CMOS LSI chips during latch-up.
- (5) Do not pull the I/F connector in or out while the module is operating.
- (6) Do not disassemble the module.
- (7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (8) It is dangerous that moisture come into or contacted the LCD module, because moisture may damage LCD module when it is operating.

- (9) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
- (10) When ambient temperature is lower than 10°C may reduce the display quality. For example, the response time will become slowly, and the starting voltage of CCFL will be higher than room temperature.

## 10.2 SAFETY PRECAUTIONS

- (1) The startup voltage of Backlight is approximately 1000 Volts. It may cause electrical shock while assembling with inverter. Do not disassemble the module or insert anything into the Backlight unit.
- (2) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (3) After the module's end of life, it is not harmful in case of normal operation and storage.

## 10.3 SAFETY STANDARDS

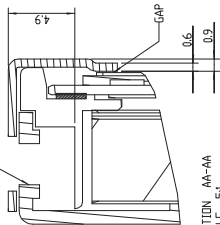
The LCD module should be certified with safety regulations as follows:

- (1) UL60950-1 or updated standard.
- (2) IEC60950-1 or updated standard.

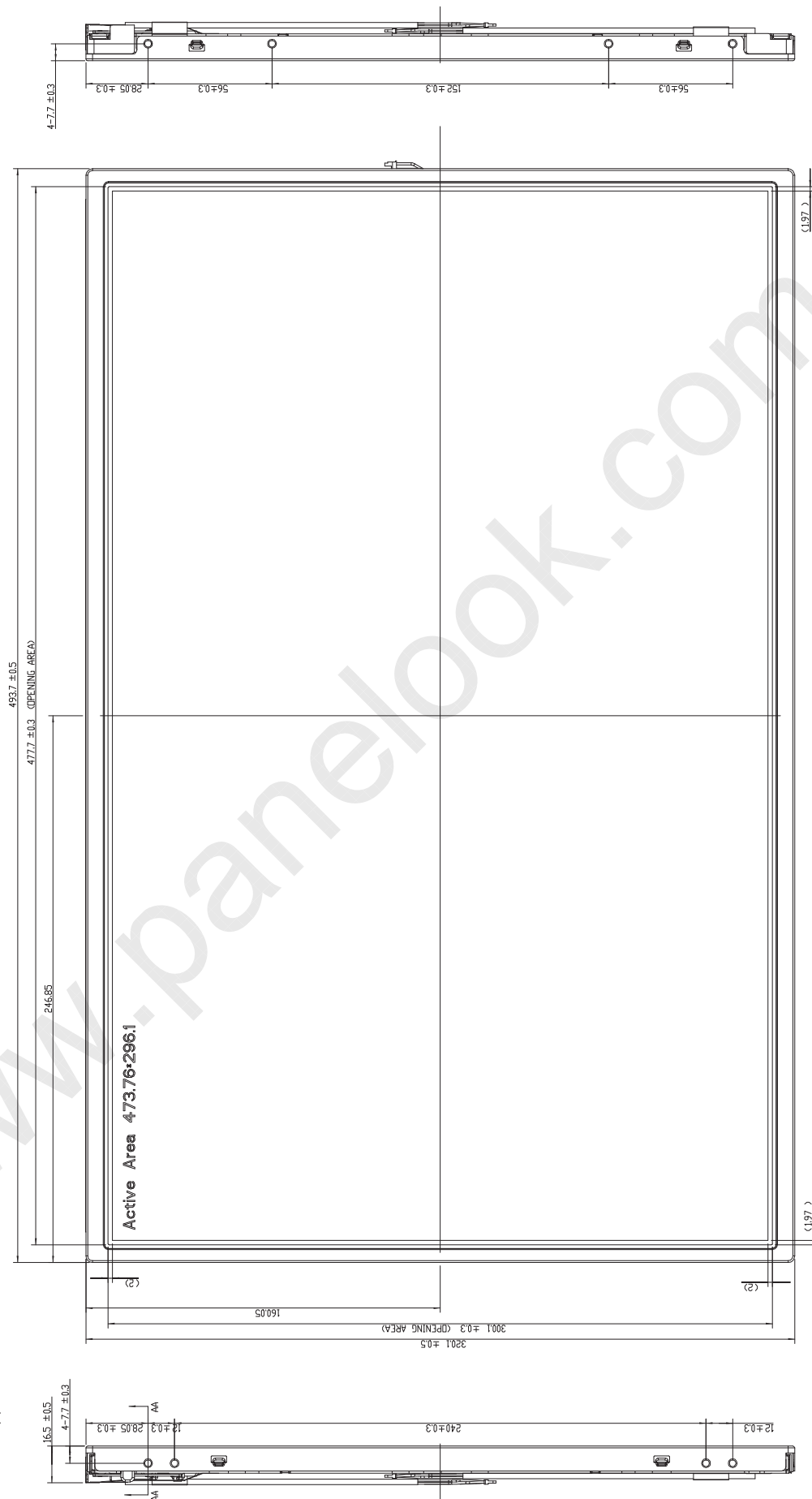




8-M3 USER HOLE  
MAX. SCREW LENGTH 4.9mm



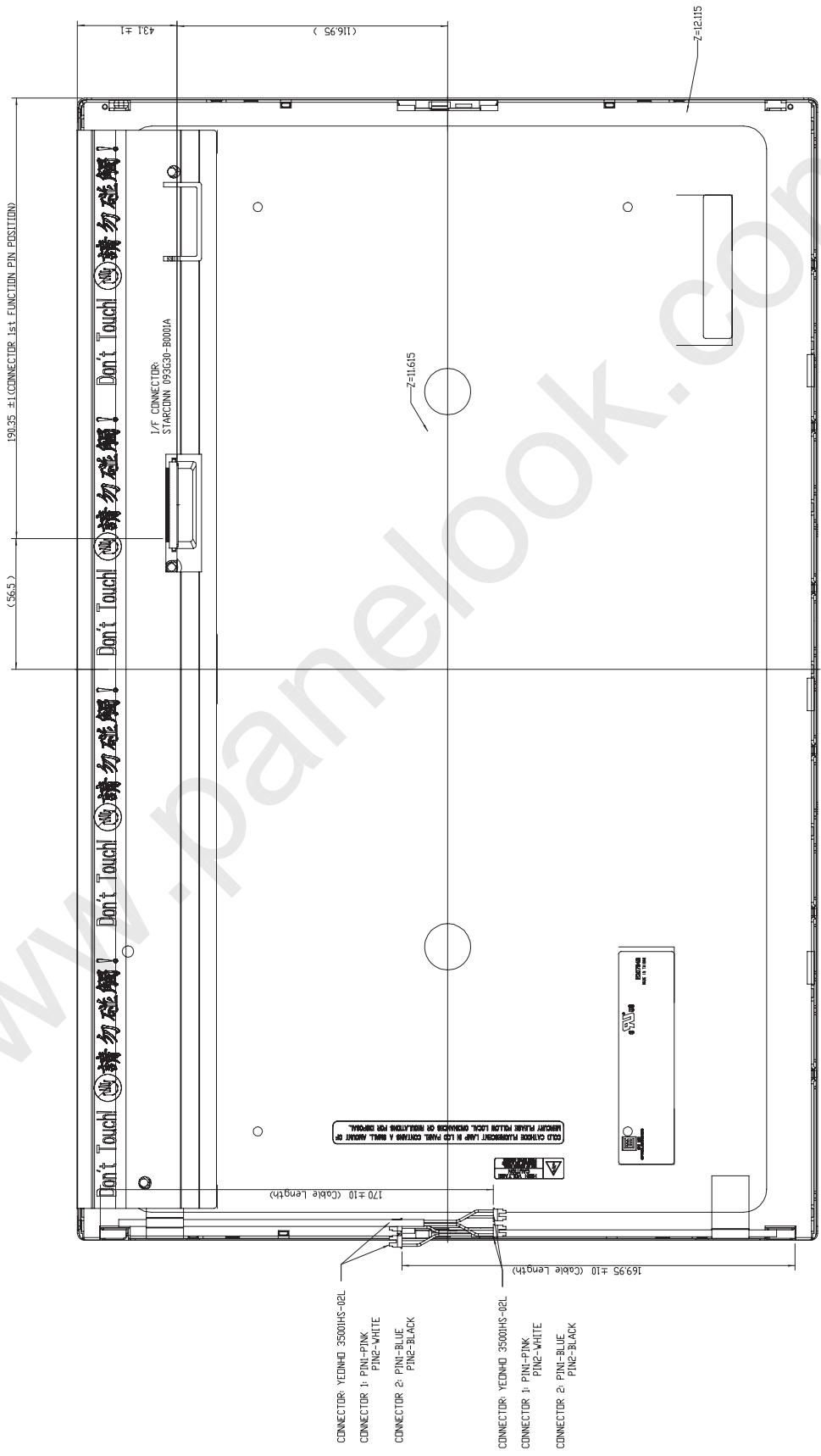
SECTION AA-AA  
SCALE 5:1



NOTES:  
1.OUTLINE TOLERANCE: ±0.5mm.  
2.I/F CONNECTOR SPEC. STARCOM 093C30-B000A or EQUIVALENT.  
3.4-SIDE MOUNT HOLE ROTATIONAL TORQUE: 0.05N·m.  
4.4-SIDE MOUNT HOLE ROTATIONAL TORQUE MUST BE MAX. 5kgf·cm.

TITLE: K55_MODULE_M200-L10		2D REV: 03	3D REV: 01
Approved	YALE LIN	Drawing No.	HC2041001
Checked	TIGER CHANG	Part No.	TBD
Drawn	TAURUS JOSEH	Material	TBD
Designer	TAURUS JOSEH	Date	15-Nov-2007
CHI MEI OPTOELECTRONICS CORP.		Scale	1:1
ALL RIGHTS RESERVED. COPYING FORBIDDEN.		Sheet	1 / 2
		Unit	mm

Mark	Description	Date	Changed By	Approved By	ECN No.	Remark



NOTES:  
1. OUTLINE TOLERANCE: ±0.5mm  
2. 1/F CONNECTOR SPEC: STARCONE 093G30-80001A or EQUIVALENT.  
3. LAMP CONNECTOR: YEDNHD 3500HS-02L  
4. SIDE MOUNT HOLE ROTATIONAL TORQUE MUST BE MAX. 5kgf-cm

TITLE: 16.1" MIDDLE MODULE		2D REV: 0.0
Approved: YALE LIN		Drawing No: M23H4001
Checked: TUEE CHANG		Part No: TBD
Drawer: TAURUS JOSEH		Material: TBD
Designer: TAURUS JOSEH		Date: 15-Nov-2007
Scale: 1:1		Sheet: 2 / 2
Unit: AL		Revision: 0.0
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Mark	Description	Date	Changed By	Approved By	ECN No.	Remark